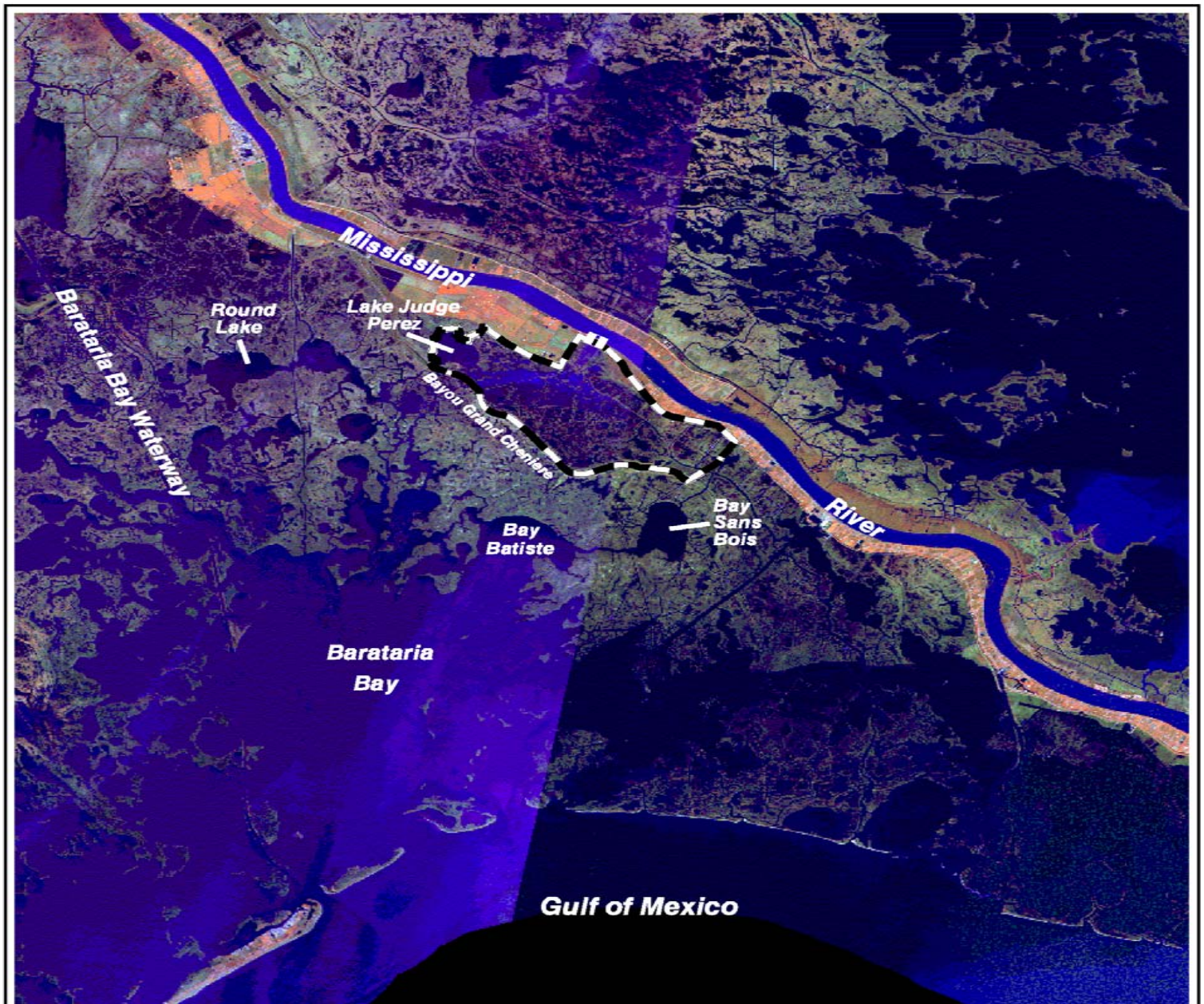
Project No. BA-04

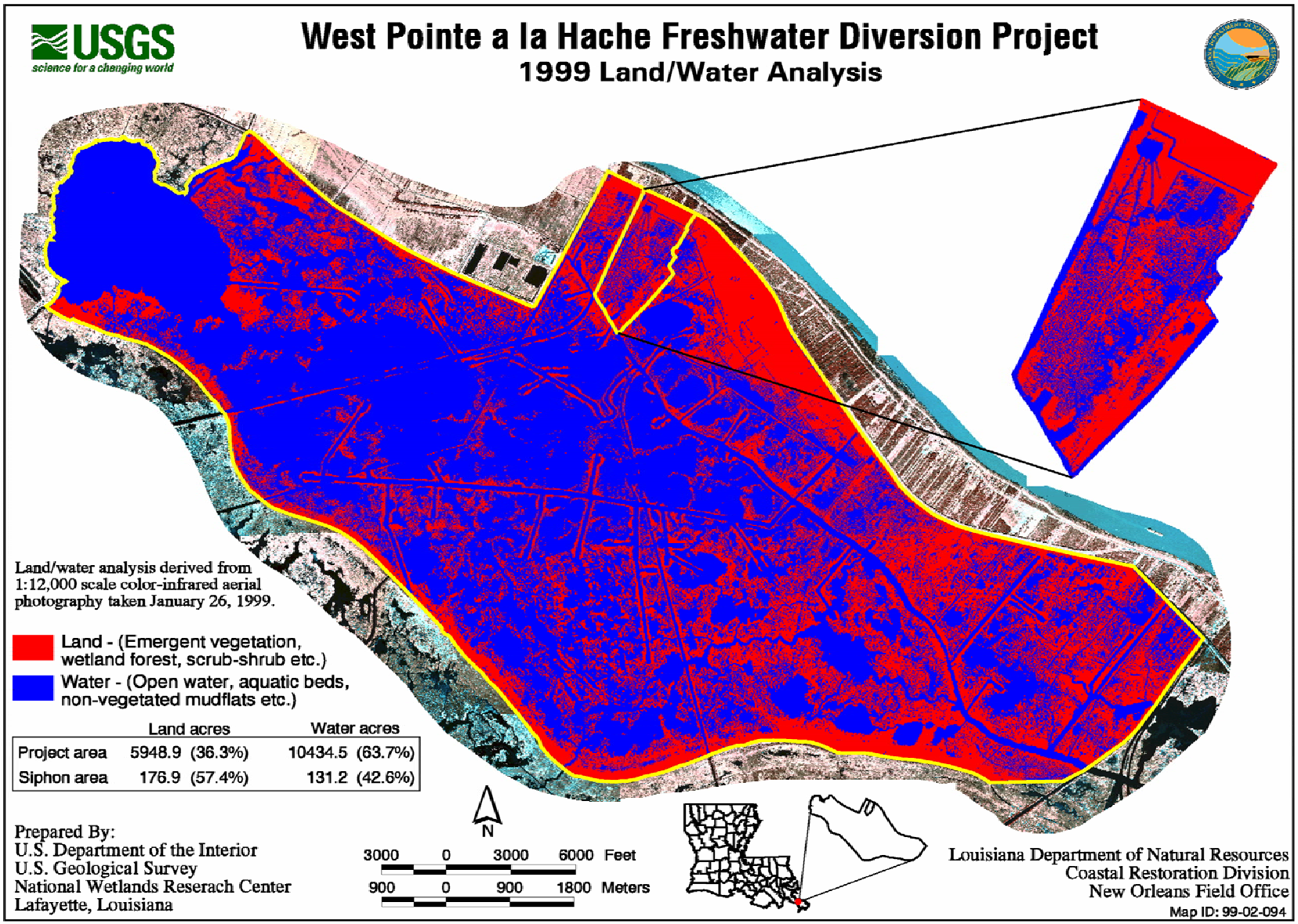
West Pointe a la Hache Freshwater Diversion

- Non-CWPPRA (75% State – 25% Parish)
- Completed April 1992
- Location:

Project No. BA-04

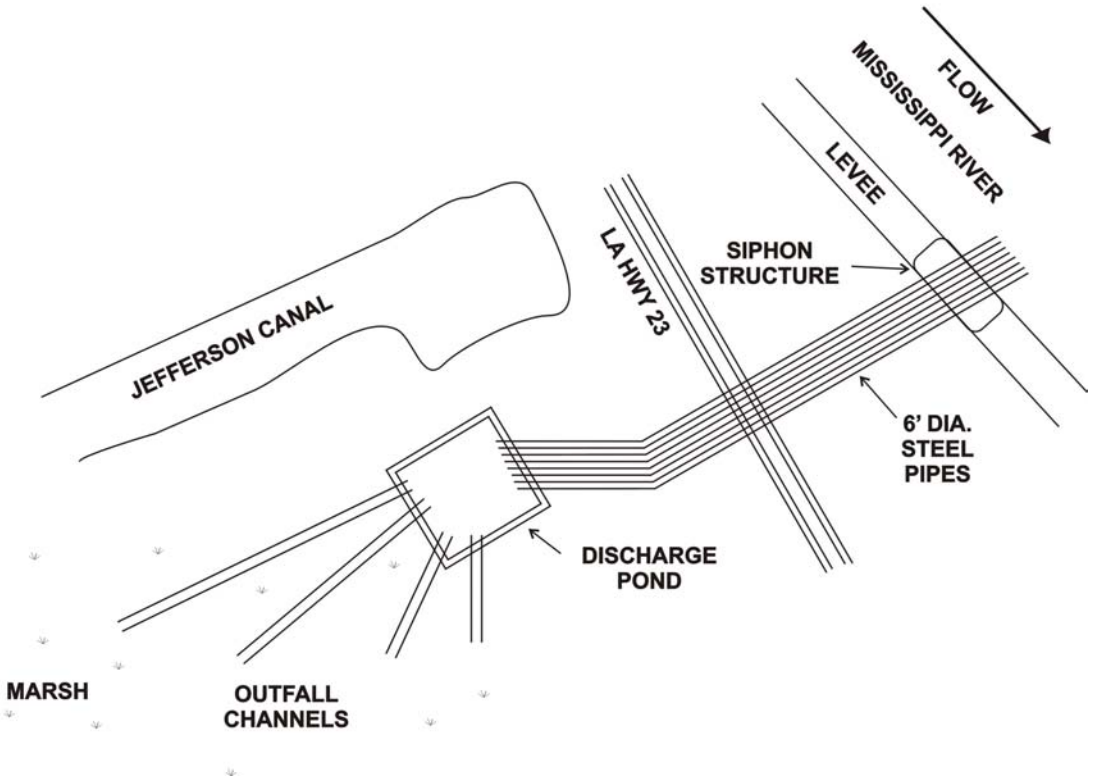


Project No. BA-04



Project No. BA-04

West Pointe a la Hache - Schematic



Planning- Causes of Wetland Loss

- Natural Causes:
  - Subsidence
  - Sea level rise
- Human Activity:
  - Construction of Miss. River levees – Stopped annual flooding of freshwater/sediments
  - Construction of oil field canals through the natural ridges in the area
    - Increased tidal exchange
    - Allowed saltwater intrusion

Goals

- Increase marsh to open-water ratio.
- Reduce mean project area salinity.
- Improve growing conditions for and increase relative abundance of target plant species Spartina patens.

- Recommendations
  - Quantify goals when possible.
  - Set target plant community type instead of focus on one species.

Operations Plan

- Plaquemines Parish is responsible for operations.
- Initial operations were based on operations scheme developed by Brown & Root. This scheme included making seasonal adjustments.
- After maintenance problems reduced the capacity of the siphon, the operations plan was changed to that of continually operating all pipes available for operation with no seasonal adjustments.

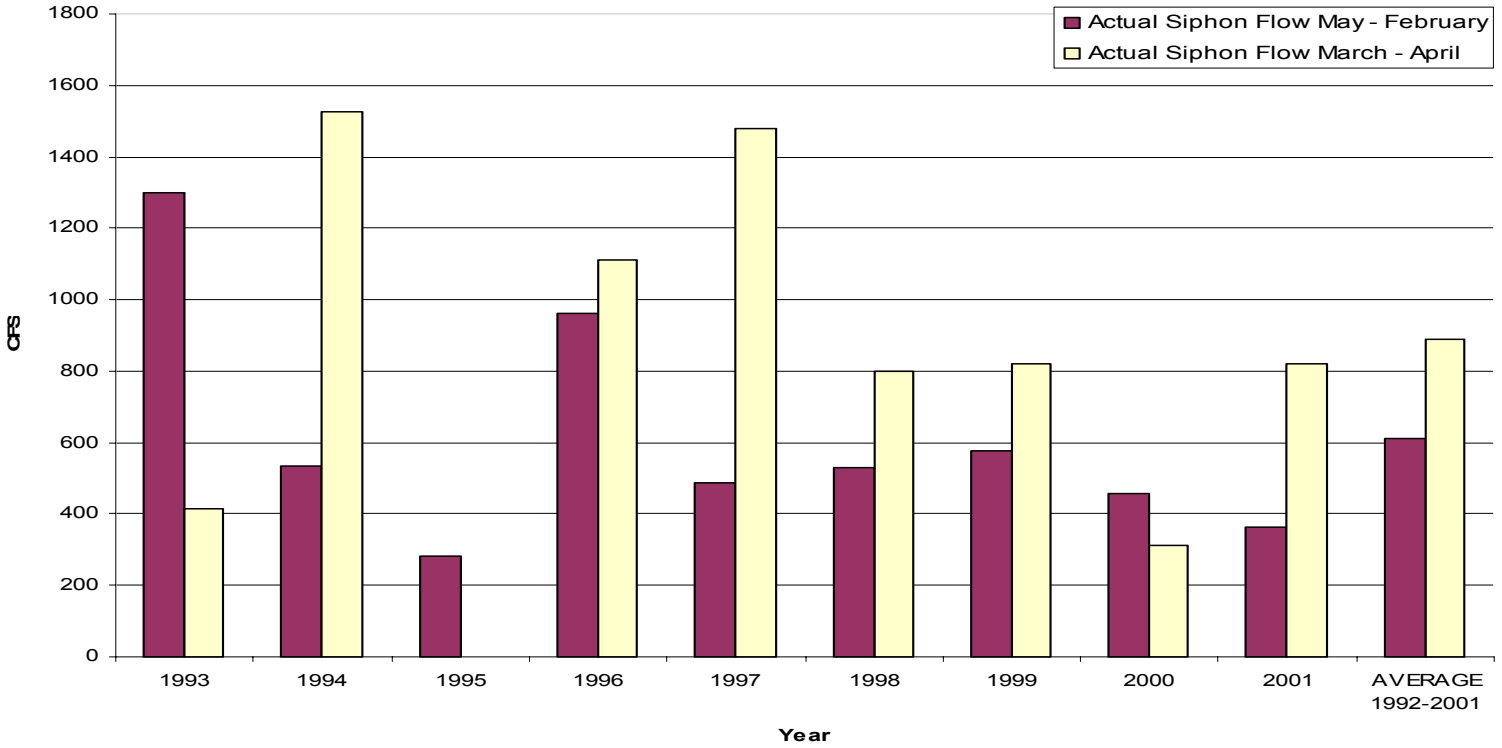
Operations Data

Condition	Average Output (cfs)
Estimated maximum flow (April)	2144 (8 pipes)
Estimated minimum flow (October)	1232 (8 pipes)
Original planned average output	1061
Actual when operating (74% of time)	898
Actual (operation + non-operation)	664

Causes of Reduced Output

- Maintenance was minimal until 2001
  - Leaking valves caused pipes to lose prime
- Fisheries concerns – Lost most of first year
- Oyster lawsuits
  - Structure shut down for over six months
  - Delayed response to maintenance problems

Project No. BA-04



Average siphon flow for two operation time periods from 1993 through 2001. AVERAGE represents the average of all years. Planned operations adjusted for biota called for two siphons during early spring and eight siphons for remainder of year.

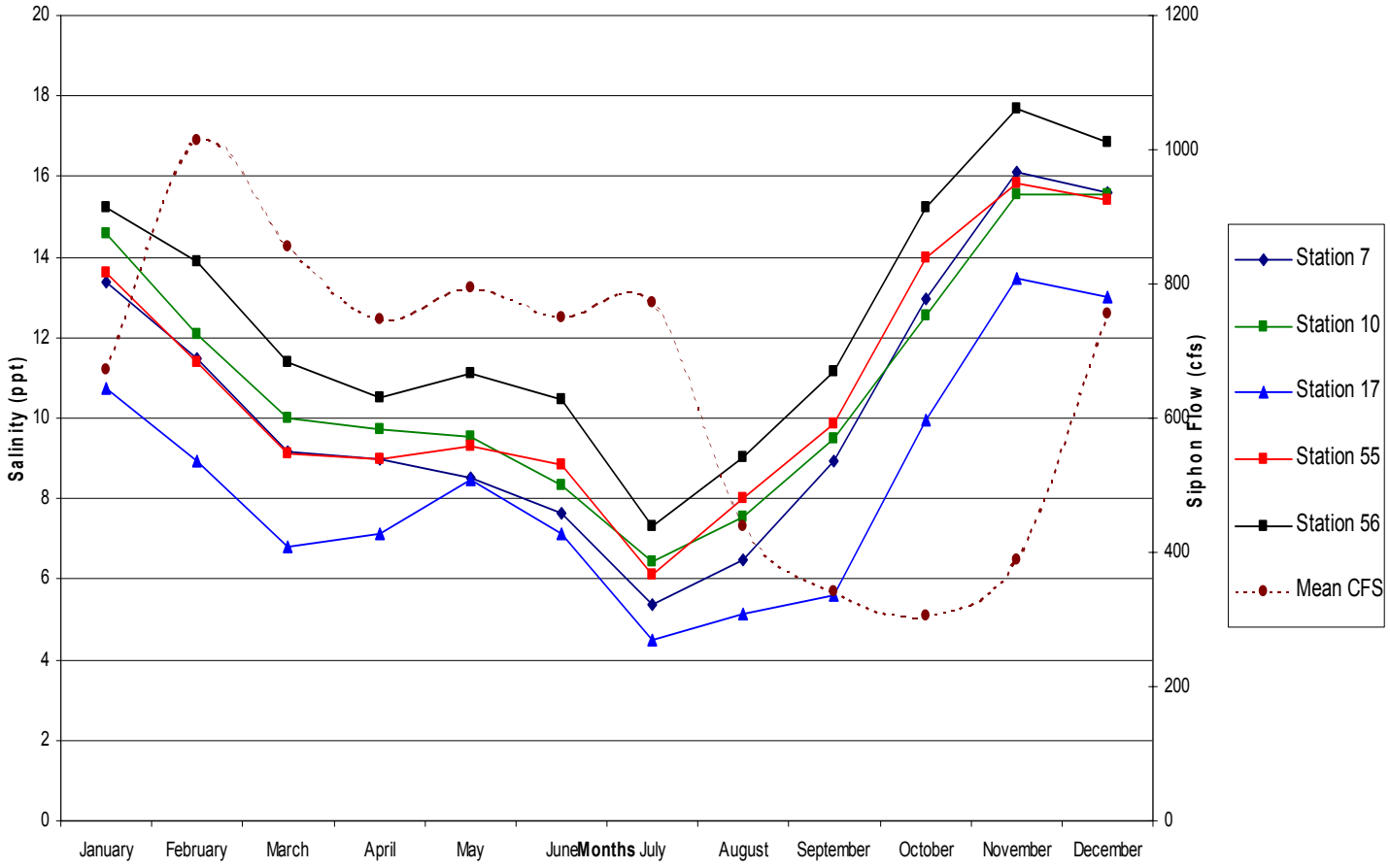
Physical Response – Water Level

- Little water level rise except near discharge point.
- Indicates little sheet flow over marsh.
- Cause:
  - Lower than planned discharge.
  - Proximity of outfall channels to large canals and bayous which quickly disperse the diverted water.

Physical Response - Salinity

- Salinity was reduced throughout project during siphon operation.
  - Without siphons: 12 to 15 ppt
  - With siphons: 7 to 10 ppt
  - Spartina patens preferred range: 8 to 14 ppt

Project No. BA-04



Landscape

- From 1991 to 1999, project area lost 460 acres of land, which represents 7.2 % of land present in 1991.
- Pre-project (1983-1990): 1.29 % loss/year
- Post-project (1991-1999): 1.03 % loss/year

Biological Response – Vegetation

- Target species, Spartina patens, increased in frequency in some areas and decreased in others
- Recommend evaluating project effect on vegetation community type instead of single species approach
  - 1992-1997: vegetation types became fresher– desired trajectory
  - 1997-2001: some areas reverted to more saline vegetation types, other areas remained static or freshened – drought and distance from siphon
  - Species diversity increased – more and fresher spp

Project Effectiveness

Goal	Effectiveness
Reduce Salinity	Yes
Increase relative abundance of Spartina p.	About the same abundance, but other intermediate and fresher species increased
Increase marsh-water ratio	No, but rate of loss was reduced slightly

Existing or Planned Improvements

- Implemented changes
  - Valve and vacuum piping maintenance (2001)
- Planned improvements
  - Outfall management plan being developed
  - Installation of a simplified priming system
    - Install fixed vacuum pump at site
  - Installation of instrumentation
    - Flow meters and gauges (possibly online)
- Potential enrichment of water with sediments

Recommended Improvements

- Revised operation plan
- Review possibility of extending channels
- Improved security system

Lessons Learned for Future Projects

- Incorporated in the CWPPRA process
  - Recognition of importance of maintenance
  - Mandatory O&M plans
- Recommended for incorporation in CWPPRA Process
  - Project goals need to be quantified so that project effectiveness can be evaluated.
  - All things being equal, use gated structures rather than siphons.

Other Lessons Learned for Future Projects

- Siphon systems are at least partly effective in mimicking the action of the river's over bank flooding.
- Lawsuits can play an important role in project decision making.
- The presence of large streams in a project area may prevent desired sheet flow but not affect salinity reduction.